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ABSTRACT

This brief description of the microcomputer service and maintenance system at Miami Dade Community College/North includes a series of hints, tips, and lists of information sources, suppliers, and regulatory codes that could prove helpful to school districts that wish to conduct on-site repair of computers. These include: (1) cleaning materials suppliers; (2) diagnostic software producers; (3) sources of information for low-voltage AC surge suppression and/or transient voltage suppression devices; (4) suppliers of anti-static products; (5) suppliers of halogen fire extinguishers; (6) sources of information on regulatory codes; (7) tips for computer safety; (8) sources of technical assistance from manufacturers; (9) a copy of the Illinois Vocational Curriculum Center's preventive maintenance checklist; (10) directions for installing and removing the disk drive cable from the analog card; and (11) directions for manipulating the drive speed adjustment screw. (JB)

WHAT TO DO WHEN THE MICRO FAILS

Presented at the

FLORIDA INSTRUCTIONAL COMPUTER CONFERENCE

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WHAT TO DO WHEN THE MICRO FAILS

The basic question "What to do when the micro fails?" is common; the answers however, are varied. When this question was asked of a number so people, the responses were varied. Some of the responses were "cal' maintenance." "call audio visual,""send it to IBM or Apple," "cry," "pray that it comes back soon," etc. Miami Dade Community College/North has a defined process for microcomputer service and maintenance. We have a very good response time and an excellent computer utilization time usage. What the fundamental question in mind, this paper will discuss some to the possibilities you should consider it the computer fails.

If the micro computer does fail, ultimately we do need to see it get fixed. These authors, along with a large number of people, feel that 70% or more of all micro computer faults can be resolved in an in-house situation. To resolve a computer failure, we must localize the problem to a software, hardware, cabling, or human one. Faults can be resolved by total replacement of the faulty system, but this isn't always practical nor feasible. Consequently we look at what is called "level 2" maintenance.

Level 2 maintenance is the process of replacement of the item or items that are causing the problem. It assumes you have more than one computer of the same kind, spare parts, and an individual with an understanding of electronics. The authors feel a local system or facility is capable of performing level 2 maintenance with very little preliminary training. This training can be obtained through the district or marketing representative

of the specific computer. With this training and a small parts complement, a reasonable service and maintenance program can be established.

Miami Dade Community College/North currently has over 150 microcomputers on its Campus. We keep over 95% of all units up and operational ALL of the time. This is accomplished by a spare parts compliment of approximately $3000.00 and two part-time AV employees. When a microcomputer fails, the problem is isolated and the technician replaces the defective board, power supply, monitor or cable with a new or repaired unit. The computer is normally operational within 15 minutes after the technician arrives. Level 2 maintenance is within the capability of virtually any facility who is willing to generate minimal support to this end goal. It is particularly prudent of a school system to consider this scheme.

TECHNICAL ASSISTANCE FOR THE MICRO

Technical assistance for the Micro has become a must in these days of the computer and its everyday use. Who is more capable and qualified to diagnose, when and if, the computer has failed to perform to its basic capability? WE ARE.

The computer is a tool, it performs a basic service and we use it because it saves time and normally is extremely accurate. But if the computer fails who complains the most and the loudest, WE DO. Who fixes the problem - a service specialist in most cases and the first thing the service technician will say - "What is the problem?" Well if we knew the problem we would probably fix it! What we usually know is what the unit isn't doing, consequently this normally will help the individual to localize the problem, isolate it to a particular area and then possibly fix the problem.

One of the major considerations reguarding the micro computer and its performance would be - are you familiar enough with the system to know if it is operating correctly or not? This ability to know, and a reasonable amount of common sense is a must if you are to communicate with the micro computer. This ability to understand allows you to run and use software, recognize symptoms that are irregular or non-traditional behavior in the micro computer.

Once a problem develops, it must be determined it it is software or hardware. If the problem is hardware, we now must LOCALIZE the problem, ISOLATE it to an area and then FIX or REPLACE the problem area.

Listed on the following pages are hints, tips, souces of information, suppliers, and codes. Hopefully they may be of help in the future.

Cleaning Materials Suppliers

The Texwipe Company 650 E. Crescent Ave. P.O. Box 575 Upper Saddle River, NJ 07458	Goldwipes, Clearview Terminal Wipes, Texswabs
Chemtronics, Inc. 681 Old Willets Path Hauppauge, NY 11788	Freon*TF, Freez-It, 70 PSI, Foam Swabs
Verbatim 323 Soquel Ways Sunnyvale, CA 94086	Disk Drive Cleaning Kit

Diagnostic Software Producers

Verbatim 323 Soquel Ways Sunnyvale, CA 94086 1-800-538-8589	Datalife Disk Drive Analyzer (Apple, IBM)
XPS, Inc 323 York Road Carlisle, PA 17013	Diagnostics II+ Diagnostics IIe (APPLE)
Nikrom Products 25 Prospect Street Leominster, MA 01453	Master Diagnostics II+ Master Diagnostics IIE (APPLE)
Central Point Software P.O. Box 19730 - 4203 Portland, OR 97219	Copy II+ (APPLE, IBM)
Software Publishing Corp. 1901 Landings Dr. Mountain View, CA 94043	Computer Checkup (APPLE)
Radio Shack 1400 One Tandy Center Fort Worth, TX 76102	Disk Drive Analyzer (TRS-80)
Dysan Corporation 5201 Patrick Henry Drive P.O. Box 58053 Santa Clara, CA 95050 1-800-551-9000	Digita Disk Data (IBM, APPLE)

Sources of information for Low-Voltage AC Surge Suppression and/or Transient Voltage Suppression Devices

GE MOV II VARISTORS OR GE Electronic Data Library Transient Voltage Suppression

General Electric
10800 N. Military Trail
Suite 207
Palm Beach Gardens, FL 33410
(305) 622-8821

IEEE Guide for Surge Voltage in Low-Voltage AC Power Circuits. Standard # IEEE Std. 587-1980

IEEE, Inc.
345 E. 47 Street
New York, N.Y. 10019

Electronic Protection Devices EPD
P.O Box 673
Waltham, Mass 02254
1-800-343-1813

Electronic Specialists Inc.
171 S. Main Street.
P.O. Box 389
Nantick, Mass 01760

ISO REG Corp.
410 Great Road
Littleton, MA 01460

RKS Industries
4865 Scotts Valley Drive
Scotts Valley, CA 95066
1-800-892-1342
1-408-438-5760

Sun Research Inc.
Box 210
Old Bay Road
New Durham NH 03855
1-603 859-7110

Cuesta Systems Inc.
3440 Roberto Court
San Luis Obispo, CA 93401
1-805-541-4160

Dymarc Industries Inc.
21 Governor's Court
Baltimore, MD 21207
1-800-638-9098 OR 1-3[illegible]-298-2629

The LEMON, LIME, ORANGE, PEACH, etc.

Isolators, suppressors and Transient Devices

Computer Power Solutions, Inc.
8800 49th Street North
Suite 203
Pinellas Park, FL 33565

Kensington Microware
251 Park Ave. South
New York, NY 10010

Alpha Delta Commuication, Inc.
P.O. Box 571
Centerville, OH 45459

Tripp Lite
500 North Orleans Street
Chicago, IL 60610

Daniel Woodhead Co.
3411 Woodhead Drive
Northbrook, IL 60062
1-312-272-7990

Lafayette Radio
Local Area

Radio Shack
Local Area

Electric/Electronic Parts Houses
Local Area

SUPPLIERS OF ANTI-STATIC PRODUCTS

ACL INC.
1960 E. Devon Ave
Elk Grove Village, Il 60007

INMAC
2465 Augustine Drive
Santa Clara, CA 95051

Misco Inc
404 Timber Lane
Marlboro, N.J. 07746

National Field Sales Inc.
2660 W. Chester Pike
Broomall, PA 19008

United Technical Products, Inc,
32 S.W. Industrial Park
Westwood, MA 02090

SUPPLIER OF HALOGEN FIRE EXTINGUISHER

Franklin Services
P.O. Box 1077
Ft. Lauderdale, FL 33302

REGULATORY CODES

The South Florida Building Code
Board of County Commissioners
Dade County, Florida

National Fire Protection Association
(National Electric Code)
470 Atlantic Ave.
Boston, MA 02210

TIPS FOR COMPUTER SAFETY

!!!!!!!!AVOID THE WORST!!!!!!!!

HAZARDS:-Keep it clean:

1. Chalkless Blackboards

2. Dust Covers

3. Dirt and Plastic/Metal
   Keep it clean using mild detergent (don't drip)
   Use a fine brush - possibly a vacuum cleaner.
   (NOTE) Vacuum cleaners put fine dust into the air

4. Printer
   Keep it clean (Household Cleaners)
   Watch ribbons
   Paper partial contamination

5. When cleaning
   Static build-up is a problem

MAINTENANCE:

6. Clean Disk Drive Heads (6 months or 50 hours)
   Maintenance kit
   Alcohol - 90% (70% is acceptable)

   Use chamois swabs not cotton swabs
   head demagnetizer
   use good quality disks - don't use other side unless
   you have a double sided drive.

7. Diagnostics
   disk drive speed
   sector seek
   memory check
   keyboard
   system check

8. WARNING
   Soldering, altering or modification of your computer o
   peripherals will void the warranty

GENERAL:

9. If computers are not of a PORTABLE variety try not to move. Tolerance of a drive and many computers mechanical parts are built to a precise tolerance and often cause problems if jarred or dropped.

10. Security
    Room security
    Computer lock-downs
    Alarms
        Sonic/ultrasonic
        Hard wired

11. Fire Protection
    Use of HALOGEN fire extinguisher

12. Electrical outlets, extension cords

13. Transient suppression
    MOV's
    Isolators
    RFI/EMI
    Tranquell surge arresters

SOURCES OF TECHNICAL ASSISTANCE:

1. IBM currently has three separate souces of technical assistance 1) an authorized IBM service facility, 2) technical coordinator training, and 3) a certified training program for electronic technicians. Details of any or all three sources may be obtained from your local marketing manager.

2. Apple currently has a similar training program and sources of technical assistance. Again details and cost may be obtained from your local Apple marketing manager.

3. Radio Shack also can generate technical assistance and support at a local level. Radio Shack also has an Educational Training Division who will train selected individuals to service and maintain the various Radio Shack units. To obtain more detailed information on this aspect write Radio Shack, Educational Division, 1400 Tandy Center, Fort Worth, T[illegible]012

ILLINOIS VOCATIONAL CURRICULUM CENTER
PREVENTIVE MAINTENANCE CHECKLIST

GENERAL:

_____Make visual inspection of external cables, electrical outlets, connections between peripherals. Inspect physical environment.
_____Inspect and clean ventilation slots.

COMPUTER:

_____Remove dust, lint, etc. from I.C. board cavity with inert gas.
_____Inspect encoder card connections (II+ only)
_____Inspect all internal cable connections.
_____Inspect seating on all chips. Look for cracks or bubbles on chip surface.
_____Clean card fingers. Replace cards firmly in slots.
_____Inspect pin connections on all cards.

DISK DRIVE:

_____Disassemble drive and remove dust, lint, etc., with inert gas.
_____Clean read/write head with lint-free swabs and solvent.
_____Inspect pressure pad for even wear. Rotate or replace if worn.
_____Inspect cable connections to analog card.
_____Inspect seating of chips. Look for cracked surfaces and bubbles on chip surface.
_____Check calibration of drive speed RPMs (Dspeed).

PRINTER:

_____Disassemble and remove dust, lint, etc., with inert gas.
_____Check all cable connections and dip switches.
_____Lubricate as per owners manual.

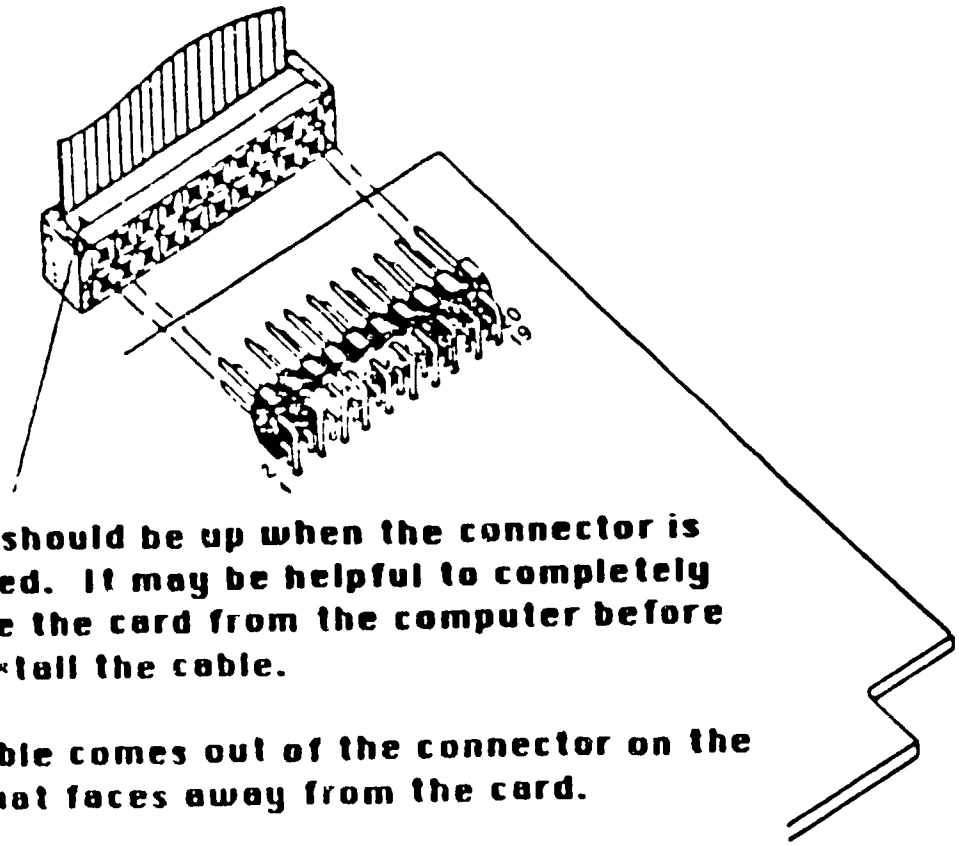
MONITOR:

_____Check all cable connections
_____Clean screen surface as per owners manual.

MAINTENANCE TOOLS

1. Solvent
2. Inert Gas
3. Small plastic screwdriver
4. Small regular screwdriver
5. Phillips screwdriver
6. Foam tip swabs
7. I.C. puller
8. Dspeed calibration software
9. GLPT insulating varnish
10. Pencil eraser or goldwipes

INSTALLING AND REMOVING THE DISK DRIVE CABLE FROM THE ANALOG CARD

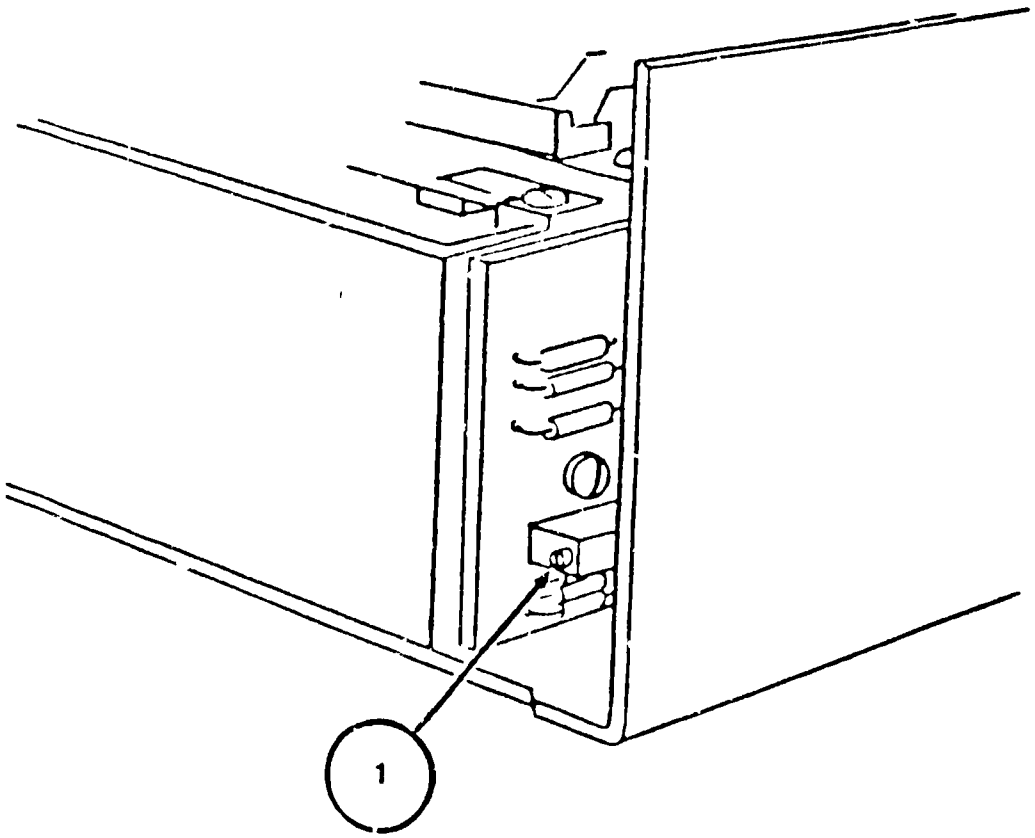


Arrow should be up when the connector is installed. It may be helpful to completely remove the card from the computer before you install the cable.

The cable comes out of the connector on the side that faces away from the card.

Make sure all pins go into the correct holes. permanent damage can result if the cable is installed incorrectly. Visually inspect before reinstalling the card.

DRIVE SPEED ADJUSTMENT SCREW



1 - Potentiometer (right rear) for adjustment of the drive speed (D-SPEED). DO NOT CONFUSE WITH THE TRIMPOTS ON THE ANALOG CARD!

Acceptable range depends upon the diagnostic program you are using. Make at least 100 test passes to insure accuracy.

Use a non-metal adjustment tool. The magnetic field of a metal tool can affect the potentiometer.